# AN EMPIRICAL EXPRESSION FOR THE LINE WIDTHS OF AMMONIA

Linda R. Brown and Dean B. Peterson, ms 183-301, 4800 Oak Grove Dr., Jet Propulsion laboratory, California institute of Technology, Pasadena, CA 91109

The hydrogen-broadened line widths of 116 $^{14}NH_3$ ground state transitions have been measured at 0.006 $cm^{-1}$ resolution using a Bruker spectrometer in the 40 to 210 $cm^{-1}$ region, The rotational variation of the experimental widths with J",K" = 1,0 to 10,10 has been reproduced to 2.4% using an heuristically derived expression of the form

$$\gamma = a_o + a_1 J" + a_2 K" + a_3 J"^2 + a_4 J" K"$$

where J" and K" are the lower state symmetric top quantum numbers.    This function has also been applied to the measured widths of the 58 transitions of $v_1$ at 3 $\mu$m, each broadened by $N_2$, $O_2$, Ar, $H_2$, and He [Pine et al., *J. Quant. Spectrosc. Radiat. Transfer SO,* 337-348 *(1993)]*.    The rms of the observed minus calculated widths are 5% or better for the five foreign broadeners.  The values of the fitted constants suggest that for some broadeners the expression might also be written as

$$y = a_o + b_1 J" + b_2 (J"-K") + b_3 J"(J"-K")$$